tion and allies of the tropical species. To these greater collections we should add the lesser at Copenhagen, Geneva, Vienna, Prag, St. Petersburg and Madrid, all of which must be visited again and again before we can fully define even our North American tropical flora. To this end it will be in order to look to the establishment of traveling fellowships that will make possible continued study in those European storehouses by trained American specialists.

The time has come for American Botany to assert itself in the modest way that becomes Americans, and assume its true position in the work of botany in the world. We have the men who have profited from the training of the best the Old World could produce in morphological, physiological, and cytological work among plants; we have young men trained and in training who have the mental acumen of the best any country can produce, combined with a degree of practicality, vitality and energy of which very many of the Europeans are lacking; we have men of means who are philanthropic toward botanical research and stand willing to aid in every work that merits recognition, and if we in America do not in the next quarter of a century lead the world in matters botanical, it will be because we are not true to the instincts that guided the fathers in botany and because we do not enter into our heritage and magnify our opportunities.

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ARTIFICIAL PARTHENOGENESIS IN ANNELIDS (Chætopterus).

My experiments on the artificial parthenogenesis in sea-urchins have led me to the following results: (1) Through a certain increase in the osmotic pressure of the surrounding solution, the unfertilized eggs of some (probably all) Echinoderms can be caused to develop into normal blastulæ or plutei. (2) This increase in osmotic pressure can be produced by electrolytes as well as by non-conductors. It is therefore probable that the parthenogenetic development is caused by the egg losing a certain amount of water.*

I considered it necessary to try whether the same results can be obtained in other groups of animals by the same means. I have recently succeeded in producing artificial parthenogenesis not only in starfish (*Asterias*), but also in worms (*Chætopterus*). The experiments on the artificial parthenogenesis in Annelids led to the unexpected result, that the unfertilized eggs can be caused to develop into apparently normal larvæ (*Trochophores*) by two entirely different methods: First, by increasing the concentration of the surrounding solution (osmotic fertilization). This method is qualitatively the same as the one by which I produced plutei from the unfertilized eggs of Echinoderms. Second, by changing the constitution of the sea-water without raising its concentration (chemical fertilization). Through a slight increase in the amount of K-ions in the sea-water the eggs of *Chætopterus* can be caused not only to throw out the polar bodies as Mead had already observed, but also to reach the *Trochophore*-stage and swim about as actively as the larvæ originating from fertilized eggs. Further experiments showed that the K-ions have no such specific effect upon the unfertilized eggs of Echinoderms. This fact may help us to understand why a hybridization between worms and Echinoderms is impossible. I shall publish a full report of these experiments in one of the next numbers of *The American Journal of Physiology.*

Jacques Loeb.
Woods Holl, July 22, 1900.

* Loeb, J., *The American Journal of Physiology*, Vol. IV., August, 1900.